

US009626563B2

US 9,626,563 B2

Apr. 18, 2017

(12) United States Patent

Hanna et al.

(54) MOBILE IDENTITY PLATFORM

(71) Applicant: **EyeLock, Inc.**, Tolima Valley, Caguas,

PR (US)

(72) Inventors: Keith J. Hanna, New York, NY (US);

Gary Alan Greene, West Windsor, NJ (US); David James Hirvonen, Brooklyn, NY (US); George Herbert Needham Riddle. Princeton, NJ (US)

(73) Assignee: Eyelock LLC, New York, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35

U.S.C. 154(b) by 0 days.

(21) Appl. No.: 14/830,366

(22) Filed: Aug. 19, 2015

(65) Prior Publication Data

US 2016/0048731 A1 Feb. 18, 2016

Related U.S. Application Data

- (63) Continuation of application No. 13/440,707, filed on Apr. 5, 2012, now Pat. No. 9,117,119, and a (Continued)
- (51) Int. Cl. G06K 9/00 (2006.01)
- (52) U.S. CI. CPC *G06K 9/00604* (2013.01); *G06K 9/00221* (2013.01); *G06K 9/00597* (2013.01)
- (58) **Field of Classification Search**CPC G06K 9/00221; G06K 9/00597; G06K
 9/00604

See application file for complete search history.

(56) References Cited

(10) Patent No.:

(45) Date of Patent:

U.S. PATENT DOCUMENTS

4,231,661 A 11/1980 Walsh et al. 4,641,349 A 2/1987 Flom et al. (Continued)

FOREIGN PATENT DOCUMENTS

CN 101027678 8/2007 JP 2007-249556 9/2007 (Continued)

OTHER PUBLICATIONS

B. Galvin, et al., Recovering Motion Fields: An Evaluation of Eight Optical Flow Algorithms, Proc. of the British Machine Vision Conf. (1998).

(Continued)

Primary Examiner — Edward Park (74) Attorney, Agent, or Firm — Foley & Lardner LLP; John D. Lanza; Paul M. H. Pua

(57) ABSTRACT

The present disclosure is directed towards a compact, mobile apparatus for iris image acquisition, adapted to address effects of ocular dominance in the subject and to guide positioning of the subject's iris for the image acquisition. The apparatus may include a sensor for acquiring an iris image from a subject. A compact mirror may be oriented relative to a dominant eye of the subject, and sized to present an image of a single iris to the subject when the apparatus is positioned at a suitable distance for image acquisition. The mirror may assist the subject in positioning the iris for iris image acquisition. The mirror may be positioned between the sensor and the iris during iris image acquisition, and transmit a portion of light reflected off the iris to the sensor.

18 Claims, 74 Drawing Sheets

